

DRAWING MACHINE

DESCRIPTION

The invention relates to a drawing machine with a draw die and a continuously-working drawing device.

Such drawing machines are already known, with which the wire can be continuously drawn. For this purpose the wire is clamped and drawn between the lower strand of an upper enclosed circulating chain and the upper strand of an enclosed circulating chain. These known drawing machines require considerable design effort and expenditure. In addition to that, they are prone to a high degree of wear, since in order to clamp the wire a force is applied to the chains transverse to their direction of run. This type of clamping also leads to a substantial development of burdensome noise.

The problem of the present invention lies in avoiding the disadvantages of these known drawing machines and ensuring reliable drawing of wire, pipes, and/or profiles.

This problem is resolved according to the invention by a drawing machine of the type referred to in the preamble in that the drawing device exhibits only one enclosed drawing element, that this drawing element is guided around axis-parallel wheels, and is moved in a controlled manner by at least one of the wheels, that the drawing element is connected to clamping devices carrying clamping chucks, and that the clamping chucks are capable of being moved towards and away from one another in a controlled manner for the purpose of taking up the wire, pipe, or profile which is to be drawn.

Advantageous further embodiments of this drawing machine can be derived in particular from the sub-claims.

A number of embodiments of the drawing machine according to the invention are described on the basis of the drawings.

These show:

- Fig. 1      A side view of an embodiment in which the drawing element is designed as a chain,
- Fig. 2      A plan view of the embodiment according to Fig. 1,
- Fig. 3      A detail view relating to the adjustment of the chain elements in order to increase the clamping force according to the line from A-A in Fig. 1
- Fig. 4      A horizontal section through the representation according to Fig. 3 according to the line B-B in Fig. 1
- Fig. 5      A section according to the line C-C in Fig. 1 with the clamping chucks closed
- Fig. 6      A representation corresponding to Fig. 5 with the clamping chucks open
- Fig. 7      An axial section through the driving wheels and the clamping devices
- Fig. 8      An embodiment relating to the controlling of the clamping devices by means of control curve and recovery by springs
- Fig. 9      A further embodiment relating to the controlling of the clamping devices by control curves and recovery likewise by control curves
- Fig. 10     A representation similar to Figure 8 with wedge

elements to increase the clamping effect

Fig. 11 A section relating to the wire feed with draw die

Fig. 12 A representation similar to Figure 1 with a device for the drawing in of the wire, and

Fig. 13 A drawing machine with opened clamping chucks and passing gripper tongs.

The embodiments of the drawing machine according to the invention represented in the drawings exhibit concordantly two chain-type drawing elements 3, which in each case run over two wheels 4, one of which is driven in each case. The driven wheels 4, like the two non-driven wheels 4, are located in each case on a common shaft 12. The chain-type drawing elements 3 are connected in each case to several clamping devices 6. In each case, clamping devices 6 belonging to two drawing elements 3, which are to be differentiated, interact in order to take up a wire 7 with their clamping chucks 5. The clamping devices 6 exhibit rollers 13, which, because of the movement of the drawing elements 3 pertaining to them, are guided on control curves 8. The clamping chuck 5 of each clamping device 6 is held by two retaining bars 11, which are guided by the chain-type draw element 3 pertaining to them. The retaining bars 11 have the effect, on the one hand, that the clamping devices are driven by the draw element 3 pertaining to them; on the other, interacting clamping chucks 5 can be moved towards one another by means of the retaining bars 11 without the individual drawing element 3 exerting a force transverse to the direction of run of the drawing element 3. That is to say, the movement of the clamping chucks 5 towards one another or away from one another is decoupled from the drawing elements 3, as a result of which the drawing elements 3 exhibit a low degree of wear.

The control curves 8 are designed in such a way that the clamping devices 6 are moved towards one another in the starting area of the upper strand, so as to take up the wire 7, and are moved away from one another, releasing the wire 7, towards the end of this strand.

In order to increase the clamping effect, on the one hand wedge elements 9a are provided for, taking effect on the position of the control curves (see Figures 3 and 13), or clamping chuck wedge elements 9b arranged in the individual clamping devices 6 (see Figure 10). Both with the wedge elements 9a according to Figure 13 or Figure 3 respectively, as well as with the wedge elements 9b according to Figure 10, a relative movement takes place when the wire 7 is taken up.